

River Raisin Area of Concern Sterling Island Restoration



City of Monroe
Monroe, Michigan



ECT Environmental
Consulting &
Technology, Inc.

Project Location



Sterling Island is a man-made island located within the River Raisin, approximately 2.5 miles upstream of Lake Erie. It connects by a foot bridge to the City of Monroe's Hellenberg Park.



The Sterling Island Restoration Project is an important step toward the delisting of the River Raisin AOC.



- Sterling Island has experienced significant erosion.
- The island was identified as being a contributor of sediment that has impaired aquatic habitat downstream.
- Restoration of Sterling Island was specifically listed as a project required for removal of the Degradation of Fish and Wildlife Populations and Loss of Fish and Wildlife Habitat BUIs in the River Raisin AOC.

Project Goals

The City of Monroe is supported by \$500,000 of EPA Great Lakes Restoration Initiative (GLRI) funding through a grant from the Michigan Department of Environmental Quality (MDEQ) .

The goals of the project are to:

- Control bank erosion to reduce sediment contributions that impair habitat downstream; and,
- Provide shallow water and refuge habitat within the river



Project Tasks

Task 1- Prepare Quality System Documentation (QAPP)

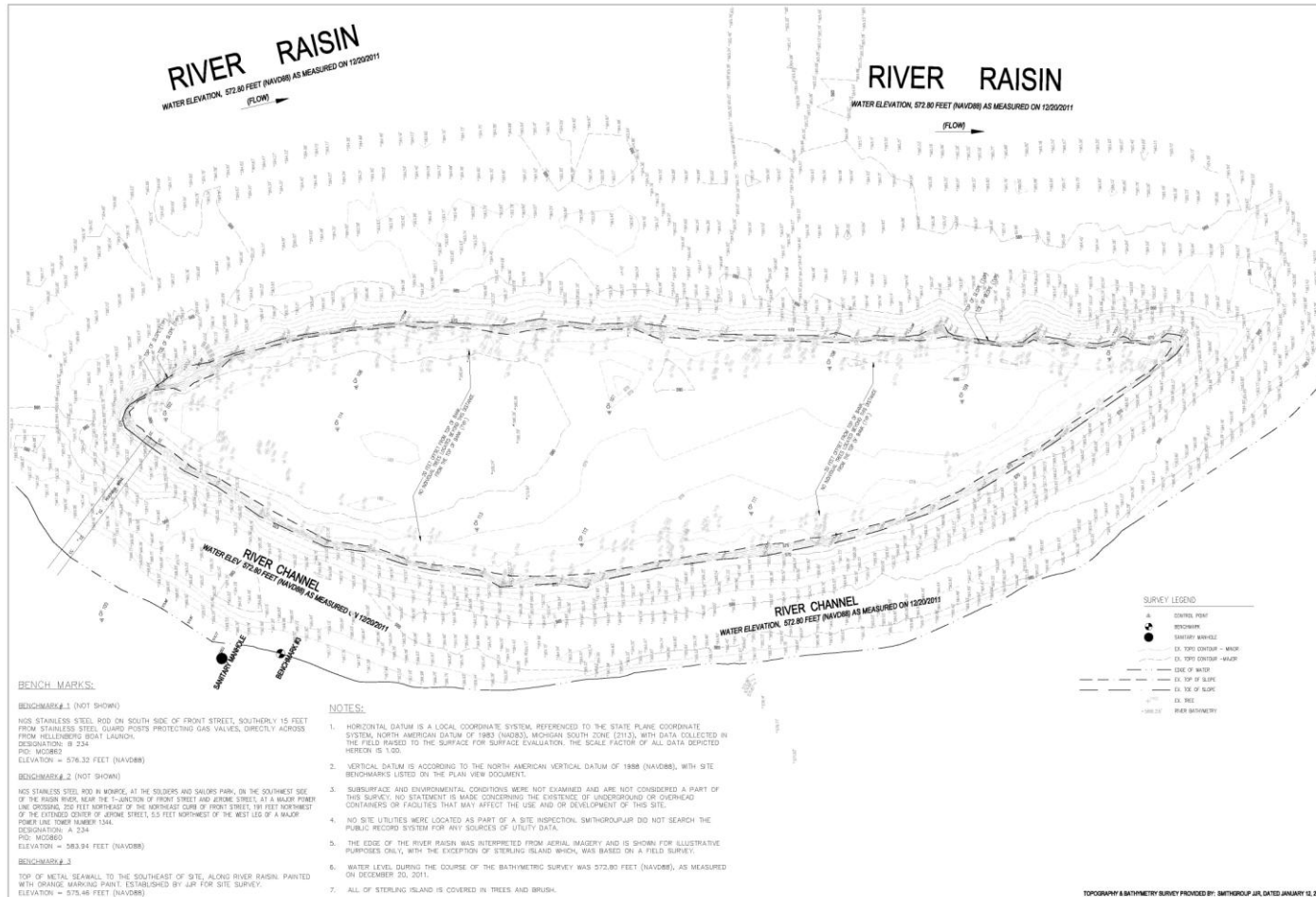
Task 2- Design

- Data Gathering
- Preliminary Design
- Plans and Specifications
- MDEQ/ USACE Joint Permit Application

Task 3- Construction

Task 4- Pre and Post Construction Monitoring

Task 5- Project Reporting



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**STERLING
ISLAND
RESTORATION**
CITY OF MONROE

MONROE COUNTY,
MICHIGAN

FOR CONSTRUCTION	5-4-12
MOEQ JOINT PERMIT APPLICATION	4-3-12
PRELIMINARY	2-13-12

PROJECT NUMBER	
DESIGNED BY	CHECKED BY
DRAWN BY	APPROVED BY

SHEET TITLE

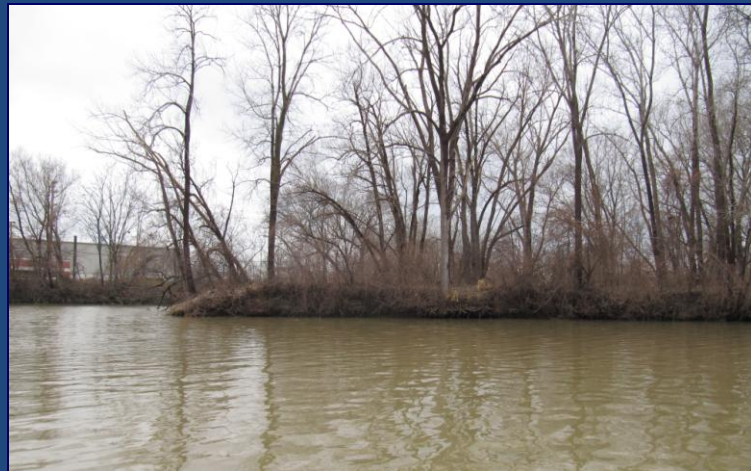
**EXISTING
CONDITIONS
PLAN**

SCALE: 1"=100' (at 22" x 34")


 SHEET NUMBER
 1

TOPOGRAPHY & BATHYMETRY SURVEY PROVIDED BY: SMITHGROUP LLC, DATED JANUARY 12, 2012.

Data Gathering



- Island is wooded
- Tops of banks are vegetated.
- Severe bank undercutting (up to 5-feet deep)
- Flow measurements and calculations were conducted. River flow velocity was found to be relatively low.
- Erosion is not due to energy associated with river flow. Rather, the erosion is caused by wave action and ice scour.

Alternatives Considered



Bioengineering

- Because of the long inundation duration, wave energy and ice scour that the island experiences, it would be difficult to establish vegetation in the eroding areas.
- Any proposed grading in association with plantings would be difficult due to access and costly.

Riprap Revetment

- Placing riprap directly on the eroded areas would be difficult due to the steep angle of the eroded banks, the considerable remaining vegetation and root structures.
- Any proposed grading in order to establish a stable slope for riprap placement would be difficult due to access and costly.

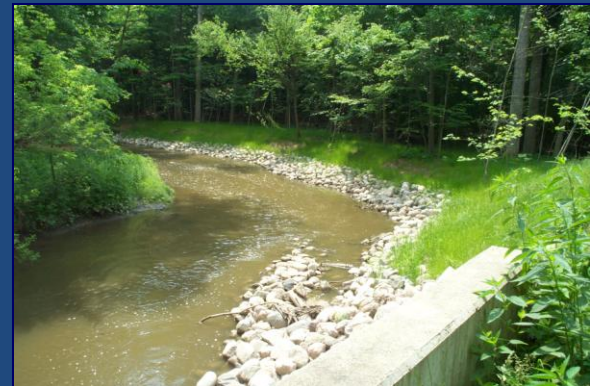
Alternatives Considered

Longitudinal Stone Toe

- Installing a longitudinal stone toe would be easier to construct and would sufficiently protect the eroded banks.
- It would allow for collection of sediment and establishment of vegetation.
- The longitudinal stone toe would not protect against ice scour.

Rock Deflector

- A rock deflector at the upstream end of the island would deflect flow, debris and ice away from the island, protecting it against ice scour.
- It would not, however protect against wave action.



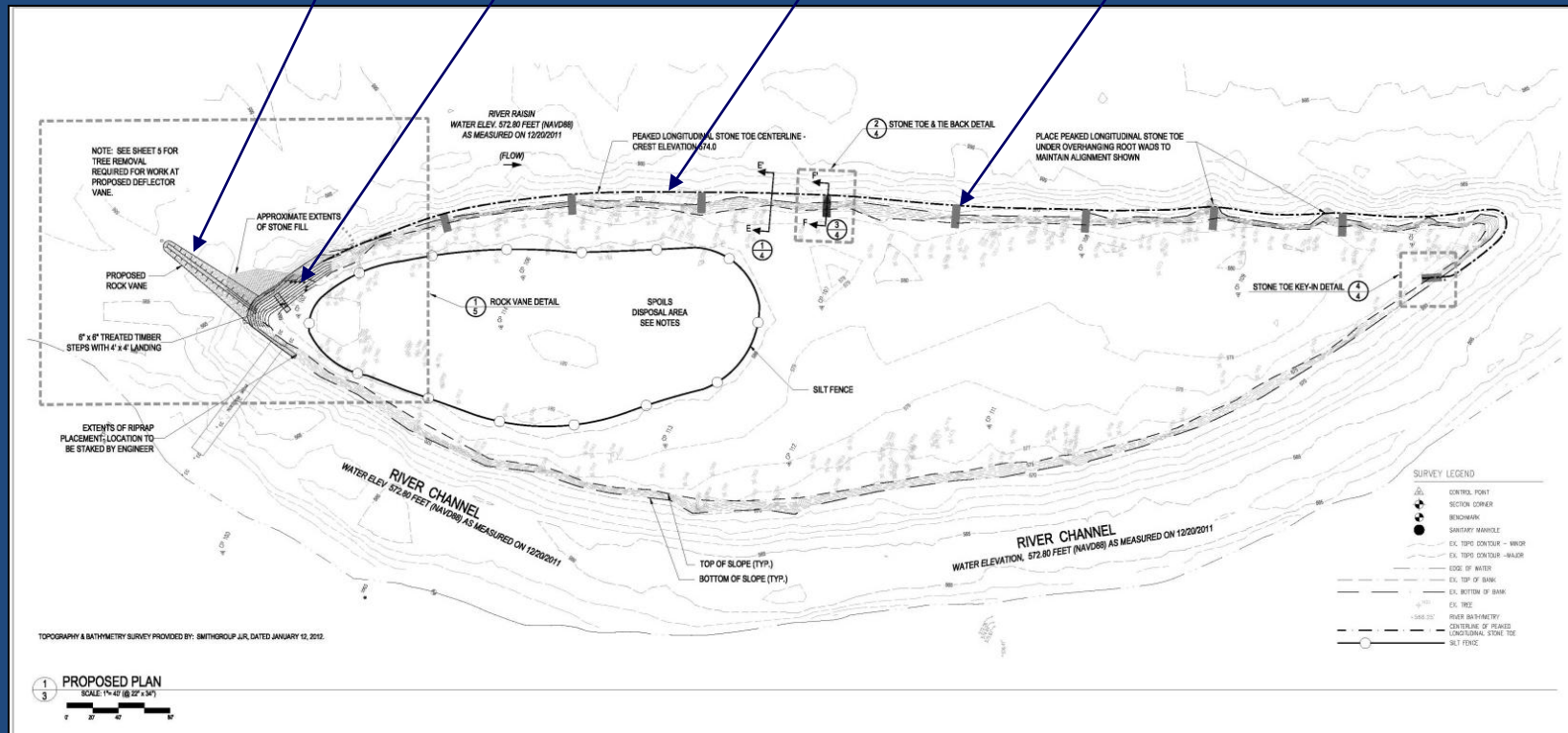
Proposed Project

Rock Vane

Re-grading
and Timber
Stairs

Longitudinal
Stone Toe

Longitudinal
Stone Toe
Tie- Back



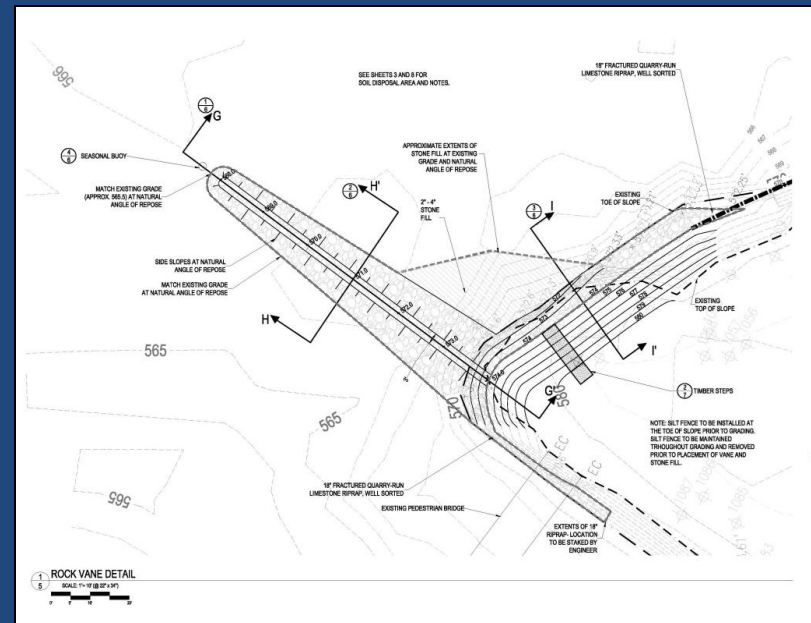
Details- Rock Vane

Rock Deflector (Rock Vane)

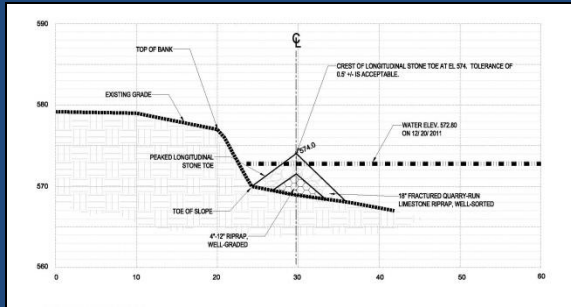
- Provide protection against river flows, wave action and ice flows
- Improve angler access to the River Raisin fishery
- Provides habitat

Grading and Timber Stairs

- Provides controlled access to the river

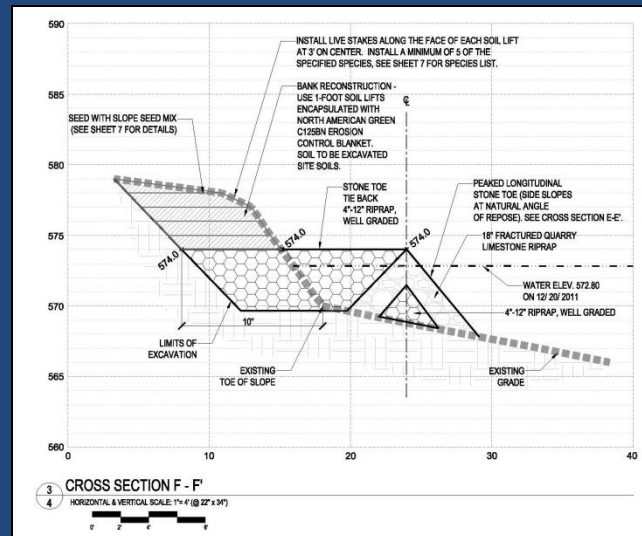
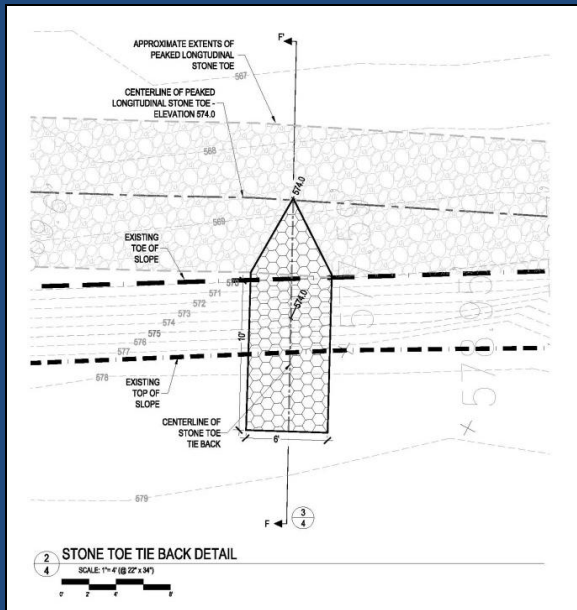


Details- Longitudinal Stone Toe



Longitudinal Stone Toe

- Protects eroded banks
- Promotes vegetation establishment
- Minimal disturbance
- Provides habitat



Pre Construction Monitoring

June 6, 7, and 8, 2012



- Sampling using electrofishing and fyke nets
- 492 fish were captured, consisting of 29 different species
- Population is diverse (both lake and riverine fish are accessing the island)
- Gizzard Shad, Emerald Shiner, Bluegill Sunfish and Pumpkinseed Sunfish were the most abundant species collected.
- Game fish: 25" Northern Pike, 16" Largemouth Bass, 15" Smallmouth Bass, and 16" Walleye

Concept Renderings



Project Tasks

Tasks Completed:

- ☒ Prepare Quality System Documentation (QAPP)
- ☒ Design- Data Gathering
- ☒ Design- Preliminary Design
- ☒ Design- Plans and Specifications
- ☒ Design- MDEQ/ USACE Joint Permit Application
- ☒ Pre Construction Monitoring

Upcoming Tasks:

- ☐ Receipt of MDEQ/ USACE Joint Permit
- ☐ Bidding and Contractor Selection
- ☐ Construction
- ☐ Post-Construction Monitoring

Ongoing Tasks:

- ☐ Reporting

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